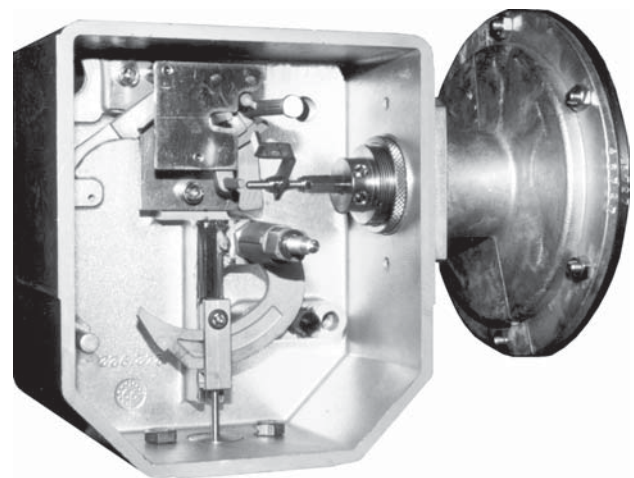


March 2006

# RELEASE RELAY

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*Type OS2*

## INTRODUCTION

The OS2 NACE Release Relay consists of a **Mechanism Box (BM)** and one or two **Safety Manometric Boxes (BMS)**. It's function is to provoke the activation of a slam shut valve which may be **stand alone** (OSB, OSE), **integrated** in a regulator (MP, MPS, Pilot DRPN , ASONEX D, C MAX, DRPN, EZR..) or

**integrated** in a K1000/K3000, in the case of under or over pressure in the controlled gas network. It may be mounted on systems of DN 25 to DN 150 and up to PN 100. It is **tight shut** and **submersible**. It may be connected to an explosion-proof contact (intrinsically safe).

Europe, Middle East, and Africa Document Only

## MECHANISM BOX (BM)

The mechanism box is designed to close a slam shut valve. The operation is ensured in two successive stages: a detection stage and a power stage. **The separation between the detection stage and the power stage provides maximum precision, indifferent of working pressure, slam shut valve diameter and gas flow.** After activation of the slam shut valve due to over or under pressure, the mechanism box must be reset manually. The complete system is available, on request only, sealed with lead and wire.

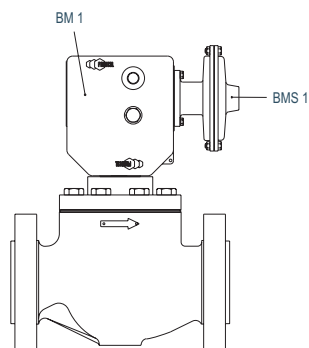
## SAFETY MANOMETRIC BOX (BMS)

The pressure data is transformed into a displacement by a safety manometric box (**BMS 1**) mounted on the mechanism box (**BM**). This displacement is used to activate the detection stage of the mechanism box in the case of **overpressure, over or underpressure, or underpressure condition.** In certain configurations, a second box may be used (**BMS 2**).

## TYPES OF INSTALLATION

Mounting on horizontal pipeline only:

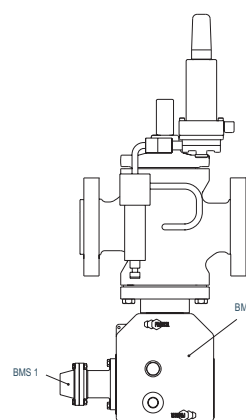
Top mounted (stand-alone valve)



N01

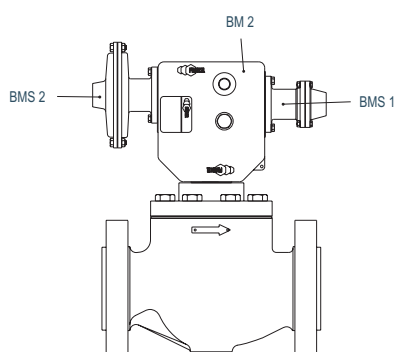
1 - BM 1: Mechanism Box with  
1 safety manometric box (BMS 1)

Bottom mounted (integrated valve and regulator)



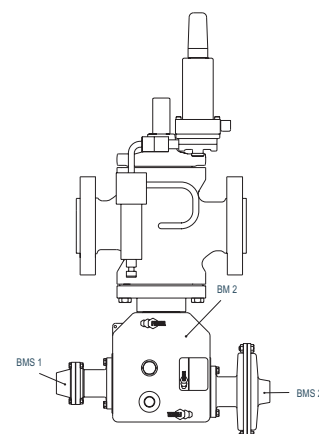
N03

3 - BM 1: Mechanism Box with  
1 safety manometric box (BMS 1)



N02

2 - BM 2: Mechanism Box with  
2 safety manometric boxes (BMS 1, BMS 2)



N04

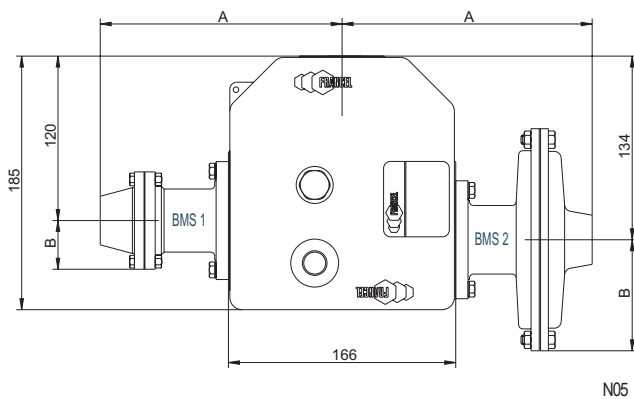
4 - BM 2: Mechanism Box with  
2 safety manometric boxes (BMS 1, BMS 2)

# OS2 NACE

## CHARACTERISTICS

Accuracy	AG 2.5		Diaphragm or bellows
	AG 5		Piston
Memorization	No memorization		
Resistance to vertical shocks	4 J		(20 shocks)
Resistance to pendular shocks	9.81 J		(20 shocks)
Sealing	IP 68		72 h under 2 m of water
Max. pressure	Inlet	100	bar
	Impulse	100	bar
Ambient temperature	- 30° to + 71°		C
Max. valve travel	50		mm

## DIMENSIONS AND WEIGHTS



5 - Sizes

			DIMENSIONS (mm)		WEIGHTS (kg)
			A	B	
BM	BM 1	for 1 BMS			2.5
	BM 2	for 2 BMS			2.5
BMS	162	Diaphragm	181	83	2.6
	71	Diaphragm	175	36	1.2
	27 or 17	Piston	204	36	2.3
	236	Bellows	202	36	2.4
	315	Bellows	223	36	2.8

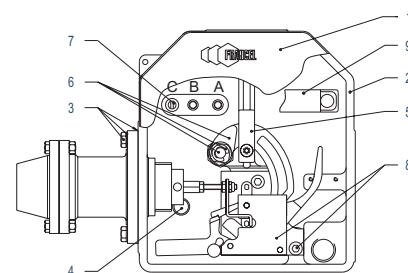
For an OS2 with one BMS add the weight of the BMS to that of the BM 1.  
For an OS2 with two BMS add the weight of the two BMS to that of the BM 2.

## DESCRIPTION AND SPARE PARTS (BM)

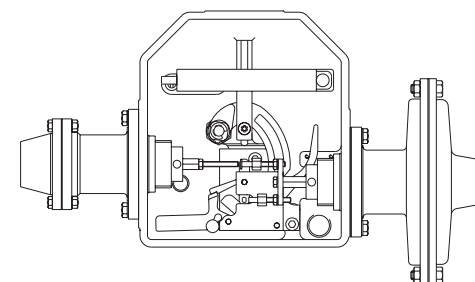
### Mechanism box assembly

Item	Description	BM 1	BM 2
	Mechanism box	181 067	181 068
1	Cap assembly (indicator, O-ring, screw)	181 061	
2	Mechanism box casing	142 924	144 071
3	Box gasket	<b>142 930*</b>	
	BMS gasket	<b>142 931*</b>	
	BMS screw	402 018*	
	BMS sealing screw o-rings	<b>461 150*</b>	
4	Non-connectable brace vent	27A5516X012	
	Vent link for 8x10 tube	406 526	
5	Yoke	181 042	
6	Fixed bolt axe (do not dismount)	142 920	
	Bolt	181 043	
	Truarc o-ring	406 128	
7	Travel stop	140 324	
	Damper	127 692	
8	Mechanism	181 041	
	Mechanism screw	402 512	
9	Resetting tool	242 915	

\* Sold as a set ref. n° 197 351.  
Items in bold are spare parts



6a - Mecanism box for 1 BMS



6b - Mecanism box for 2 BMS

### CONNECTIONS

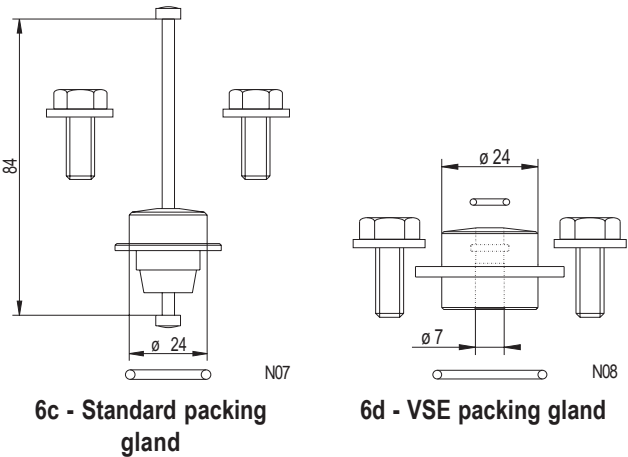
Non connectable	Plastic vent with screen	1/4" NPT
Connectable	Link for 8/10 tube	
Contact	Box exit	1/2" NPT

DESCRIPTION AND SPARE PARTS (BM)

Packing gland assembly

Description	Packing gland		
	Valve		
	OSB	VSE	Standard
Assembly	<b>181 089</b>	<b>181 090</b>	<b>181 104</b>
Packing gland and stem	181 040		181 040
Packing gland		144 126	
O-ring	400 514	400 505	400 514
O-ring		400 221	
Fastening screw H M7	402 028		402 028
Fastening screw H M8		402 036	402 036
Flat washer (7)	405 005		405 005
Flat washer (8)		405 006	405 006

Items in bold are spare parts



OPERATION (BM)

The detection stage consists of two parts:

- the releasing stem (1),
- the 1<sup>st</sup> stage trigger (2).

Through the intermediate of the safety manometric box (BMS), the pressure provokes a pin movement (D1 or D2), which provokes the rotation of the releasing stem (1) and frees the 1<sup>st</sup> stage trigger (2).

The power stage consists of two parts:

- the 2<sup>nd</sup> stage trigger (3),
- the cam (4).

The 2<sup>nd</sup> stage trigger (3), activated by the 1<sup>st</sup> stage trigger (2), frees the cam (4), which provokes the valve to close.

After release, the **resetting** is ensured in two stages: (detection stage, then power stage) see "commissioning".

Position indicator

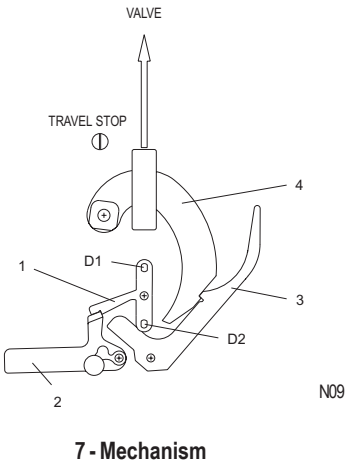
The position of the detection stage can be seen through the position indicator glass.

Memorization

The releasing stem will only start moving when pressure approaches the pressure set point. In all other cases, it remains fixed. Furthermore the assembly has a very high resistance to shocks. If pressure approaches the set point, the releasing stem turns, but with the slightest shock or vibration it will go back to it's initial position and pressure returns to normal. The mechanism is said to be non memorizing.

Resistance to shocks

This assembly has a remarkable resistance to shocks (20 vertical shocks of 4 J and 20 pendular shocks of 9.81 J), with pressure close to set point (for example: 186 mbar for a set point of 200 mbar).



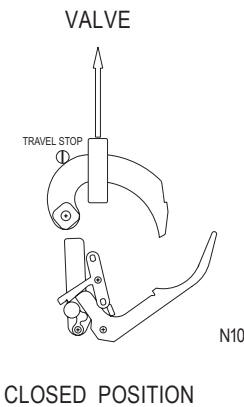
CONNECTIONS (BM)

- Fixation BM / Connector:  
H M7 or H M8 screws  
16 N.m torque
  - Sealed BM / Connector:  
Flat O-ring (water resistant)  
Packing gland (gas resistant)
  - Mechanism contact / Slam shut valve:  
Control rod
  - BM connector / atmosphere:  
Integrated vent nipple with screen (supplied) or compression fitting (supplied) for 8/10 tube (not supplied)\*
  - Electrical connection:  
See page 6
- \* The 8/10 tube should be angle-shaped on the top to avoid water from entering.

MECHANISM BOX (BM) MATERIAL

Mechanism Box (BM)			
Box	Body	Aluminium	Chromatation
	Cover	Aluminium	Chromatation
	Position indicator	Polycarbonate	
	Self-jamming ring	Steel	Phosphatation
	Cover nut	Stainless steel	
	Circlips	Steel	Phosphatation
Mechanism	All parts	Stainless HR	
	Brackets	Brass	
	Bolt	Brass	
	Elastic O-ring	Steel	Phosphatation
	Torsion spring	Stainless steel	
	Traction spring	Bronze	
Yoke	Self-jamming ring	Steel	Phosphatation
O-rings	Flat	EPDM	
	Cover	Neoprene	
	Truarcring	Nitrile	

Packing gland		
Body	Bronze	
Control rod	Stainless steel	Chromium plating
Truarcring	Nitrile	



COMMISSIONING (BM)

Commissioning differs depending on whether the assembly has an **internal** or **external** bypass and whether **overpressure** releasing is required or not. See corresponding technical manuals for further details.

*Note: The position of the travel stop (item. 7 drawing 6a) depends on the type of assembly and it's size.  
Position A, B or C depending on max. travel of slam shut valve:  
A = 15 mm travel, B = 35 mm travel, C = 50 mm travel.*

• Mechanism box (BM) intervention

To access the box the cover must be removed. When unscrewing the nut a circlips is used to remove the O-ring. The cover is held on by one screw which can be unscrewed manually or using a socket screw key (**max. recommended couple 2.5 N.m**).

• Resetting


To reset the slam shut (after the fault has been settled), the 1<sup>st</sup> mechanism stage must be reset by manually turning the 1<sup>st</sup> stage trigger. If the slam shut has an internal bypass the cam must be slightly turned using a resetting key to bypass. If the slam shut has an external bypass, a bypass valve will be used.

In both cases:


**Wait for the pressure to be equalized** before resetting the 2<sup>nd</sup> mechanism stage.

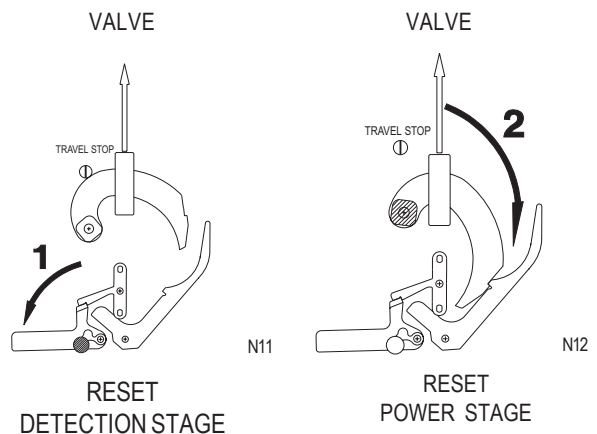
When resetting the 2<sup>nd</sup> mechanism stage (opening of the valve) a reset key is used (delate).

**Never use an extension pipe with the reset key** when resetting the 2<sup>nd</sup> stage (max. normal couple 16 N.m, **never go over 32 N.m**).



**WARNING**  
**AUTHORIZED PERSONNEL ONLY**  
**Risk of injury**  
After rearming, remove the reset key from the stem.  
Do not put fingers in or near the reset mechanism area.





8a – Release activation stages

MAINTENANCE (BM)

Tools :

- Spanner 11 (screw 7) and 13 (or 14) (screw 8)
- Screwdriver

• Control

- 1<sup>st</sup> and 2<sup>nd</sup> stage mechanism releasing
- Packing gland is tight shut
- Yoke greasing

• Disassembly

- Check that assembly is not under pressure
- Manual release of slam shut (drawing n° 7)

- Manually press on the releasing stem pin D1 or D2 (drawing 7, item 1) **parallel to the BMS axe**
- Unscrew the travel stop (screwdriver)
- Unscrew the BM fastening screws (flat spanner 11 (screw 7) and 13 (or 14) (screw 8))
- Disassemble the mechanism box (BM) from the connector by unlocking the yoke

• Assembly

- Proceed in reverse order to disassembly

OPTIONS (BM)

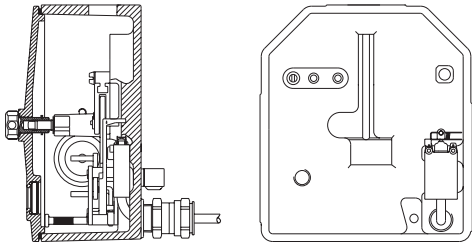
- **Remote alert** (on BM 1 or BM 2)  
Detects 2<sup>nd</sup> stage releasing (power)
- **Remote control**  
Atmospheric solenoid valve (releasing by min. pressure) for max. releasing pressure of 30 bar. Safety manometric box (BMS) activated with a pneumatic or electro-pneumatic impulse.
- **Manual control on BM 2 with 1 BMS 1 only**  
Push button (connected at the same place as a BMS 2).

Contact

	AC	DC
Max. intensity	7.0 A	0.8 A
Max. tension	400 V	250 V
Protection	EEx-d IIC T6	
Tightness	IP 66	
Temperature	- 29°C + 71°C	
Fastening	2 M3 screws	
Cable	3 wires (black, brown, blue) H05VVF (3 x 0.75 mm²) D 6.5 mm	

Versions

Versions	Installation	Sealing	Connection	Mechanical connections	Electrical connections			
					Common	NF	NO	Connection
C0		IP 68	Without	1/2 NPT cap				
C1	Explosion proof	IP 68	Explosion proof	3 m wire	Black	Blue	Brown	Wires
C2		IP 65		Explosion proof connector box/PE explosion proof	3	4	5	Screwed wiring
C3	Intrinsic safe	IP 68		Intrinsic safe tight-shut connector	A	B	C	Welded wiring



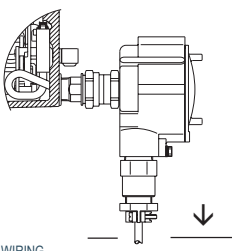
WIRING

3 m

NF : Normally closed  
NO : Normally opened

N13

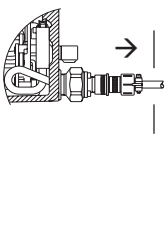
**Version C1 connection**  
Explosion proof connection with cable and tight-shut packing gland



WIRING

N14

**Version C2 connection**  
Explosion proof connection with explosion proof connector box



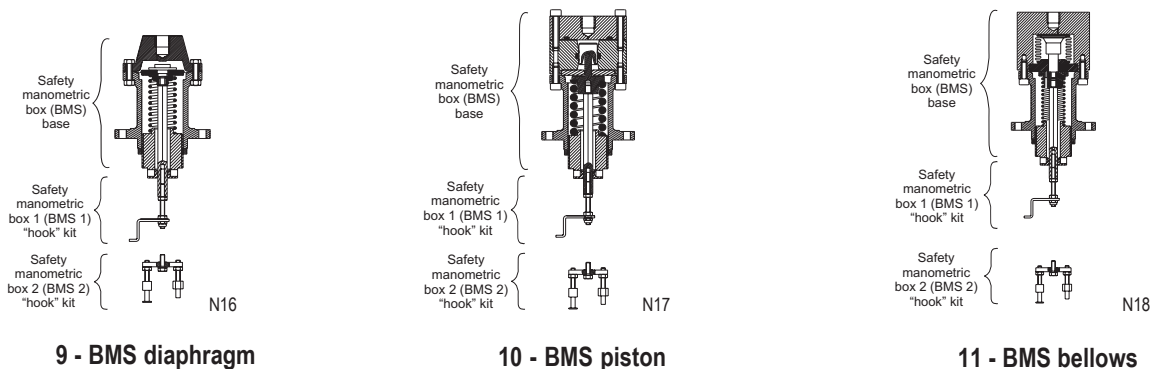
WIRING

N15

**Version C3 connection**  
Explosion proof connection with sealed connector for intrinsic safe

8b - Differents versions of BM OS2 connections

SAFETY MANOMETRIC BOX (BMS)  
DESCRIPTION AND SPARE PARTS



Description		Diaphragm (Max. and/or Min.)		Piston (Max. or Min.)			Bellows (Max. and/or Min.)	
		162	71	27	27 NACE*	17	236	315
BMS 1	Compete box	181071	181072	180999	181323	180998	181073	181074
	Base	181105	181106	181107	181322	181108	181109	181110
	Hook kit	181111						
BMS 2	Compete box	181084	181085	181070		181069	181086	181087
	Base	181105	181106	181107		181108	181109	181110
	Hook kit	181112				181112		
Spare parts	Diaphragm	137906	142549					
	Set of O-rings			197352	400115 400116	197352		

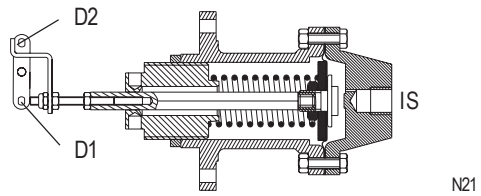
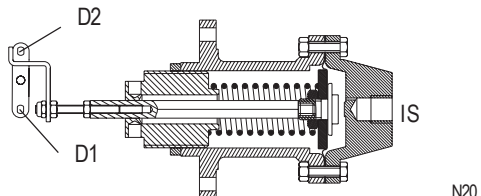
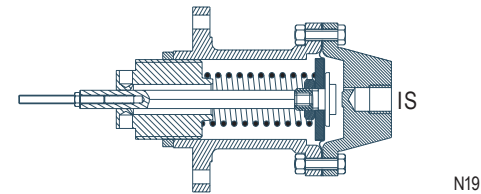
\* Execution in conformity with the NACE standard MR0175 - 2001

Items in bold are spare parts

DESCRIPTION (BMS)

- **Impulse line**  
The impulse line (IS) is connected to the network to be protected (normally downstream of the regulator).
- **Impulse type**  
Depending on the pressure and precision required, different types of impulse may be used: Diaphragm, Piston or Bellows.
- **Springs**  
To cover all pressure ranges, a set of springs of equal length and diameter, but of different wire diameter (2 to 6.5 mm), may be used.
- **Detection**  
Possible configurations.

		Action by	Max. only	Min. only	Max. & Min.
1 BMS	BMS 1	Releasing screw	Active	Neutral	Active
		Hook	Neutral	Active	Active
2 BMS	BMS 1	Releasing screw	Active		
		Hook	Neutral		
	BMS 2	Pushbutton	Active	Neutral	Active
		Hook	Neutral	Active	Active





## OPERATION (BMS)

The pressure of the network to be protected pushes the diaphragm, piston or bellows.

The force resulting from this opposes the force (adjustable)

coming from the set-point spring.

When pressure varies, the detection rod moves and provokes releasing by max. or min. pressure.

### Releasing by max. pressure

Pressure	BMS 1	BMS 2
	Releasing screw	Push button
Normal	Without D1 pin contact	Without D2 pin contact
Increase	With D1 pin contact	With D2 pin contact
= Set point	Rotation of releasing stem and 1 <sup>st</sup> stage trigger	

### Releasing by min. pressure

Pressure	BMS 1	BMS 2
	Hook	Hook
Normal	Without D2 pin contact	Without D1 pin contact
Decrease	With D2 pin contact	With D1 pin contact
= Set point	Rotation of releasing stem and 1 <sup>st</sup> stage trigger	

## CONNECTIONS (BMS)

On the mechanism box : 2 H M6x16 screws (code 402018)

BM sealing : Flat O-ring and tight shut O-rings

On the manometric box : 1/4" NPT screwed

Recommended tube: 8/10 mm

The sensing line must be connected downstream of the regulator.

## SPRING ADJUSTMENT RANGES (BMS)

(see definitions page 10)

MAX. ONLY	BMS			SPRING		MAX. ONLY			INTERVALS
	Type	Size	PMS box (bar)	Ø wire (mm)	Code	P setting (bar)			Δ1
						Max. low pt. possible	Recommended range		Δ1 (bar)
							Max. low pt.	Max. high pt.	
MAX. ONLY	Diaphragm	162	10	2.0	113 195	0.010	0.015	0.035	0.004
				2.5	113 196	0.025	0.040	0.080	0.005
				3.0	113 197	0.045	0.080	0.140	0.010
				3.5	113 198	0.070	0.070	0.240	0.014
				4.0	113 199	0.115	0.140	0.380	0.018
				5.0	113 201	0.140	0.300	0.750	0.050
				5.5	113 202	0.250	0.600	1.3	0.080
				6.5	114 139	0.450	1.2	2.3	0.170
		071	20	4.5	113 200	1.0	2.0	5.1	0.350
				5.5	113 202	2.1	4.0	11.0	0.700
				6.5	114 139	4.0	8.0	16.0	1.6
	Piston	027	100	5.5	113 202	16.0	16.0	22.0	3.0
				6.5	114 139	22.0	22.0	40.0	6.5
		017	100	5.5	113 202	40.0	40.0	55.0	7.0
				6.5	114 139	55.0	55.0	100.0	12.0
	Bellows	236	35	5.5	113 202	5.5	11.0	22.0	1.6
				6.5	114 139	8.3	16.0	35.0	2.5
		315	72	5.0	113 201	17.5	35.0	72.0	5.0



## SPRING ADJUSTMENT RANGES (BMS) (continued)

MIN. ONLY	BMS			SPRING		MIN. ONLY			INTERVALS
	Type	Size	PMS box (bar)	Ø wire (mm)	Code	P setting (bar)			Δ1
						Min. low pt. possible	Recommended Range		Δ1 (bar)
							Min. low pt.	Min. high pt.	
	Diaphragm	162	10	2.0	113 195	0.010	0.015	0.035	0.004
				2.5	113 196	0.025	0.040	0.080	0.005
				3.0	113 197	0.045	0.080	0.150	0.010
				3.5	113 198	0.070	0.070	0.240	0.014
				4.0	113 199	0.115	0.150	0.400	0.018
				5.0	113 201	0.140	0.300	0.650	0.050
				5.5	113 202	0.250	0.600	1.15	0.080
				6.5	114 139	0.450	1.1	2.0	0.170
		071	20	4.5	113 200	1.0	2.0	4.7	0.350
				5.5	113 202	2.1	4.0	9.5	0.700
				6.5	114 139	4.0	8.0	14.4	1.6
	Piston	027	100	5.5	113 202	16.0	16.0	19.0	3.0
				6.5	114 139	19.0	19.0	38.0	6.5
		017	100	5.5	113 202	38.0	38.0	50.0	7.0
				6.5	114 139	50.0	50.0	90.0	12.0
	Bellows	236	35	5.5	113 202	5.5	11.0	16.0	1.6
				6.5	114 139	8.3	16.0	28.0	2.5
		315	72	5.0	113 201	17.5	28.0	65.0	5.0

MAX. & MIN.	BMS			SPRING		MAX. & MIN.		INTERVALS	
	Type	Size	PMS box (bar)	Ø wire (mm)	Code	P setting (bar)		Δ1 & Δ2	
						Min. low pt. possible	Max. high pt.	Δ1 (bar)	Δ2 (bar)
	Diaphragm	162	10	2.0	113 195	0.010	0.035	0.004	0.010
				2.5	113 196	0.025	0.080	0.005	0.025
				3.0	113 197	0.045	0.140	0.010	0.050
				3.5	113 198	0.070	0.240	0.014	0.060
				4.0	113 199	0.115	0.380	0.018	0.150
				5.0	113 201	0.140	0.750	0.050	0.350
				5.5	113 202	0.230	1.3	0.080	0.600
				6.5	114 139	0.450	2.3	0.170	1.1
		071	20	4.5	113 200	1.0	5.1	0.350	2.5
				5.5	113 202	2.1	11.0	0.700	5.5
				6.5	114 139	4.0	16.0	1.6	10.0
	Piston	027	Not possible with only 1 BMS						
		017							
	Bellows	236	35	5.5	113 202	5.5	22.0	1.6	10.0
				6.5	114 139	8.3	35.0	2.5	20.0
		315	72	5.0	113 201	17.5	72.0	5.0	33.0

## DEFINITIONS

PMS box	Maximum operational box pressure
Pa	Nominal downstream regulator pressure
Pa max	Maximum downstream regulator pressure (normally closing regulator pressure)
Pa min	Minimum downstream regulator pressure (disturbance in function with flow and/or inlet pressure is to be considered)
Pd max	Maximum releasing pressure
Max. high pt.	High regulator pressure at maximum
Max. low pt.	Low regulator pressure at maximum remaining within the accuracy class
Max. low pt. possible	Low regulator pressure at furthest maximum point (precision is not guaranteed)
Pd min	Minimum releasing pressure
Min. high pt.	High minimum regulator pressure
Min. low pt.	Low regulator pressure at minimum remaining within the accuracy class
Min. low pt. possible	Low regulator pressure at furthest minimum point (precision is not guaranteed)
$\Delta 1$	Minimum difference allowed between Pd max. and Pa max. and/or between Pd min. and Pa min.
$\Delta 2$	Maximum difference allowed between maximum and minimum releasing pressure

## SELECTION GUIDE LINES: PRESSURE LIMITATIONS

Max. only	Min. only	Max. & Min.
Pd max. $\leq$ PMS box (BMS) Pd max. $\leq$ Max. high pt. Pd max. $\geq$ Max. low pt. Pd max. $\geq$ Pa max. + $\Delta 1$	Pa max. $<$ PMS box (BMS) Pd min. $\leq$ Min. high pt. Pd min. $\geq$ Min. low pt. Pd min. $\geq$ Pa min. - $\Delta 1$	Pd max. $\leq$ PMS box (BMS) Pd max. $\leq$ Max. high pt. Pd max. $\geq$ Pa max. + $\Delta 1$ Pd min. $\geq$ Min. lowest pt. possible Pd min. $\leq$ Pa min. - $\Delta 1$ Pd max. - Pd min. $\leq \Delta 2$

*Note: When the set point (max. or min.) falls between the lowest and lowest pt. possible, the precision may pass into a superior range (example AG 2.5  $\rightarrow$  AG 5). If the pt. value is too close to that of the Pa, the option RJGI tripping is recommended (consult factory). In the case of 2 safety manometric boxes (BMS) both boxes should have a PMS  $>$  to the highest Pd max.*

## SELECTION OF BMS AND SPRINGS

Chose the type of safety manometric box (BMS) according to:  
PMS, the type of releasing precision

PMS	Diaphragm	Bellows	Piston
0 - 20			
20 - 72		(*)	
72 - 100			
AG 2.5			
AG 5			
Max. only			
Min. only			
Max. & min.			


(\*) Choice between piston (regular) and bellows (optional).  
Bellows are recommended if you require a small gap between releasing pressure, inlet pressure and exact precision.  
Pistons do not allow for minimum and maximum releasing.

Choice of springs:

- **Max. only or min. only**  
Take the spring with the highest point directly superior to the releasing pressure required.
- **Max. and min.**  
Take the spring with the highest maximum point superior to the maximum releasing pressure required or with the lowest point inferior to the minimum tripping pressure required.

## MATERIALS (BMS)


	Diaphragm	Bellows	Piston	Piston NACE
Spring case	Zinc pl steel		Stainless steel	
Spring box	Aluminium + Chromatation			
Diaphragm	Nitrile mesh			
Piston			Stainless steel	
Bellows		Stainless steel		
Spring	Zinc pl steel			Stainless steel
Adjustment screw	Zinc pl steel			



**WARNING**

**AUTHORIZED PERSONNEL ONLY**

**Risk of injury**



After rearming, remove the reset key from the stem.  
Do not put fingers in or near the reset mechanism area.

## ADJUSTMENT (BMS)

Generally speaking, adjustments are carried out with the slam shut valve closed. Only the detection stage is reset. Control of the releasing value may be obtained by resetting the two stages.

### Warning

*Before any adjustment, check that the spring range installed corresponds to the required set point*

### BMS 1 (Diagrams 9 to 11 page 7)

#### RELEASING BY MAX. ONLY

##### • Adjusting the releasing screw

Free the min. hook (2).

Then in the following conditions:

- no pressure in the safety manometric box (BMS),
- set-point spring compressed so that the distance between the releasing screw and the pin D1 no longer increases, adjust the releasing screw (1) to  $X = 1.5 \text{ mm}$  (detection stage set).

Jam nut (3).

##### • Adjusting the max. only releasing pressure

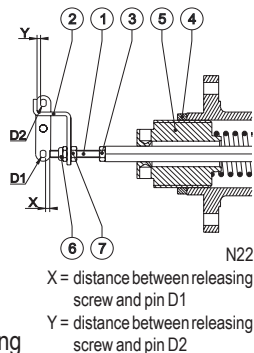
Admit the releasing pressure to Pd max.

Screw the adjustment screw (5) until detection stage can be set.

Unscrew the adjustment screw (5) until detection stage release.

Check the pressure value at the releasing point (adjust if necessary).

Jam nut (4).



#### RELEASING BY MIN. ONLY

##### • Adjusting the releasing screw and hook

Free the min. hook (2).

Then in the following conditions:

- set-point spring decompressed (adjustment screw (5) unscrewed),
  - pressure equal to the releasing pressure required for Pd min in the BMS,
- adjust the releasing screw (1) to  $X = 2 \text{ mm}$  (detection stage set).

Jam nut (3).

Put the hook (2) into position and adjust  $Y = 1.5 \text{ mm}$  with nuts (6) and (7).

Jam nuts (6) and (7).

##### • Adjusting the min. only releasing pressure

Continue admitting the required releasing pressure.

Screw the adjustment screw (5) until detection stage release.

Check the pressure value at the releasing point (adjust if necessary).

Jam lock nut (4).

#### RELEASING BY MAX. AND MIN. (diaphragm or bellows only)

##### • Adjusting the releasing screw

Free the min. hook (2).

Then in the following conditions:

- set-point spring decompressed (adjustment screw (5) unscrewed),
- pressure equal to the max. releasing pressure required in the BMS,

adjust the releasing screw (1) to  $X = 0 \text{ mm}$  (detection stage set).

Release manually.

Unscrew the releasing screw (1) 2 turns, which represents a distance of approximately 1.5 mm.

Jam nut (3).

##### • Max. adjustment

Same procedure as paragraph "Adjusting max. only releasing pressure".

##### • Min. adjustment

Admit an average pressure between max. and min., (for example: regulator set-point pressure).

Set the slam shut.

Admit a pressure equal to the min. Pd min. releasing pressure required.

Adjust the hook (2) by progressively moving nuts (6) and (7) until it releases.

Jam nuts (6) and (7).

Check the pressure value at the releasing point (adjust if necessary).

### BMS 2 with 1 max. only BMS 1

#### RELEASING BY MAX. ONLY

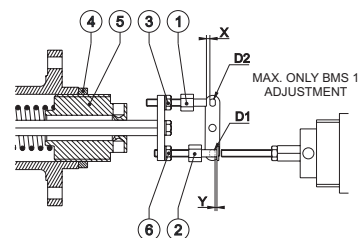
##### • Adjusting the max. push button

Remove the hook (2).

Then in the following conditions:

- no pressure in the BMS,
- set-point spring compressed so that the distance between the push button (1) and the pin D2 no longer increases, adjust the push button (1) to  $X = 1.5 \text{ mm}$  (detection stage set).

Jam nut (3).



##### • Adjusting the max. only releasing pressure

Same procedure as paragraph "Adjusting the max. only releasing pressure".

#### RELEASING BY MIN. ONLY

##### • Adjusting the min. only hook

Remove the max. push button (1) or screw it tight to neutralize it.

Jam nut (3).

## ADJUSTMENT (BMS) (continued)

### RELEASING BY MIN. ONLY (CONTINUED)

Then in the following conditions:

- set-point spring decompressed (adjustment screw (5) unscrewed),
- pressure equal to releasing pressure required in the BMS, adjust the min. hook (2) to  $Y = 1.5 \text{ mm}$  (detection stage set). Jam nut (6).

### • Adjusting min. only releasing pressure

Same procedure as paragraph "Adjusting max. only releasing pressure".

### RELEASING BY MAX. AND MIN.

### • Adjusting the push button

The min. hook (2) is completely unscrewed.

Then in the following conditions:

- set-point spring decompressed (adjustment screw (5) unscrewed),
- pressure equal to the max. releasing pressure required in the BMS.

adjust the push button (1) to  $X = 0 \text{ mm}$  (detection stage set).

Release manually.

Unscrew the push button (1) 2 turns, which represents a distance of approximately 1.5 mm.

Jam nut (3).

### • Adjusting the releasing pressure to max. and min.

#### Max. adjustment

Same procedure as paragraph "Adjusting the max. only releasing pressure".

#### Min. adjustment

Admit an average pressure between max. and min., (for example regulator set-point pressure).

Set the detection stage.

Admit a pressure equal to the min. releasing pressure required.

Screw the hook (2) progressively until detection stage release.

Jam nut (6).

Check the pressure value at the releasing point (adjust if necessary).

## MAINTENANCE (BMS)

### • Control

- Slam shut releasing (twice yearly)
- External tight shut
- Impulse part (diaphragm, bellows or piston)

### • Disassembly

- Unscrew the connector from the sensing line
- Remove the safety manometric box (BMS)
- Unscrew the blocking nut on the adjustment screw (manually)
- Unscrew the adjustment screw (resetting tool)
- Remove the hook or plate, depending on the type of BMS 1 or 2, from the detection rod (flat spanner 7)
- Remove the upper case
 

BMS 162	(flat spanner 11)
BMS 071	(flat spanner 8)
BMS piston 27/17	(key 5)
BMS bellows 236/315	(key 5)
- Disassemble the set plate/counter plate (Flat spanner 17 and pliers)
 

or
- Remove the bellows or piston and guide (manually)

### • Assembly

- Proceed in reverse order to disassembly

### • BMS torque values

- Upper spring case/manometric box
 

BMS 162:	8 N.m
BMS 071:	5 N.m
BMS piston 27/17:	6 N.m
BMS bellows 236/315:	6 N.m
- BMS 162 and 071 nut/diaphragm plate: 20 N.m

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